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10/682,092	10/10/2003	David Steer	77682-215 /aba	9212

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EXAMINER	
EKONG, EMEM	
ART UNIT	**PAPER NUMBER**
2681	

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/682,092	STEER ET AL.	
	Examiner	Art Unit	
	EMEM EKONG	2681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 October 2003*.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.
    4a) Of the above claim(s) *1-9 and 32-38* is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *10-31* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *10/10/2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All b)☐ Some * c)☐ None of:
        1.☐ Certified copies of the priority documents have been received.
        2.☐ Certified copies of the priority documents have been received in Application No. _____.
        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date *08/09/04 &11/28/03*.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-9 and 32-38, drawn to a wireless network node and WLAN system employing multiple antennas for data communication, classified in class 455, subclass 107.

   II. Claims 10-31, drawn to wireless network node, method, and controller for detecting connection of an auxiliary antenna, classified in class 455, subclass 97.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as, for example, a controller for detecting presence of an antenna. See MPEP § 806.05(d).

3. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purpose as indicated is proper.

4. During a telephone conversation with Thomas Kelly on July 4, 2005 a provisional election was made *without* traverse to prosecute the invention of Group II, claims 10-31. Affirmation of this selection must be made by Applicant in replying to this Office Action. Claims 1-9 and 32-38 are withdrawn from further consideration by the Examiner, 37 C.F.R. 1.142(b), as being drawn to a non-elected invention.

Information Disclosure Statement

5. The information disclosure statement (IDS) submitted on August 09, 2004 and November 28, 2003 has been considered by the examiner and made of record in the application file.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless – (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 10, 11, 13, 16, 26 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by International Pub. No. WO 95/13668 to MARK PENNOCK (Pennock et al.).

Regarding claim 10, Pennock et al. discloses a wireless network node (i.e. radiotelephone system includes a remote transceiver) for providing transit of data with other wireless network nodes in a wireless network, the wireless network node comprising (page 3 lines 7-14):

at least one transit antenna (first antenna) to provide data transmission between at least one other wireless network node in the wireless network and the wireless network node (figure 1 and page 3 lines 9-16);

an auxiliary antenna port (second antenna connector) to which an auxiliary antenna (second antenna) can be coupled(see figure 1, page 1 lines 11-30, page 3 lines 14-21); and

an antenna detector adapted to detect whether or not an auxiliary antenna is coupled to the auxiliary antenna port (second antenna connector) (page 3 lines 22 -29);

wherein upon detection that the auxiliary antenna is or is not coupled to the auxiliary antenna port (second antenna connector), the wireless network node is adapted to include or not include the auxiliary transit antenna port as an option for communications (page 4 lines 17-23).

Regarding claim 11, Pennock et al. discloses the wireless network node of claim 10 wherein the antenna detector is adapted to automatically detect whether or not an auxiliary antenna (second antenna) is coupled to the auxiliary antenna port (second antenna connector) (page 3 lines 22- 29, and page 6 lines 24-28).

Regarding claim 13, Pennock et al. discloses the wireless network node of claim 11, wherein the antenna detector measures a signal received through the auxiliary antenna port for use in a determination of whether or not an auxiliary antenna (second antenna) is or is not coupled to the auxiliary antenna port (second antenna connector) (see figures 3 and 4, pages 6 line 22-page 7 line 17).

Regarding claim 16, Pennock et al. discloses the wireless network node of claim 10 in combination with an auxiliary antenna (second antenna) coupled to the auxiliary antenna port (page 4 lines 4-18).

Regarding claim 26, Pennock et al. discloses a method of operating a wireless network node having an auxiliary antenna port (second antenna connector) (see figure 1, page 1 lines 11-30, page 3 lines 14-21), the method comprising:

determining whether or not an auxiliary antenna is coupled to the auxiliary antenna port (page 3 lines 22 -29); and upon

determining that an auxiliary antenna is coupled to the auxiliary antenna port, at least one of transmitting and receiving wireless signals through the auxiliary antenna coupled to the auxiliary antenna port; upon determining that an auxiliary antenna is not coupled to the auxiliary antenna port, not using the auxiliary antenna port (page 4 lines 17-23).

Regarding claim 29, Pennock et al. discloses a controller (switch) for a wireless network node having an auxiliary antenna port (second antenna connector), the controller (switch) having a function of:

determining whether or not an auxiliary antenna (second antenna) is coupled to the auxiliary antenna port (page 3 line 29-page 4 line 16);

upon determining that an auxiliary antenna (second antenna) is coupled to the auxiliary antenna port, one of transmitting and receiving wireless signals through the auxiliary antenna (second antenna) coupled to the auxiliary antenna port (page 3 line 29-page 4 line 16); and

upon determining that an auxiliary antenna (second antenna) is not coupled to the auxiliary antenna port (second antenna connector), not using the auxiliary antenna port as though it did not exist (page 3 line 29-page 4 line 16).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pennock et al. in view of International Pub. No. WO 01/52357 A1 to M J C KAMPHUIS (KAMPHUIS et al.).

Regarding claim 12, Pennock et al. discloses the wireless network node of claim 11 above, wherein the antenna detector measures a signal for use in a determination of whether or not an auxiliary antenna is or is not coupled to the auxiliary antenna port.

However, Pennock et al. fails to disclose the antenna detector measures a standing wave ratio (SWR) for use in a determination of whether or not an auxiliary antenna is or is not coupled to the auxiliary antenna port.

In a similar field of endeavor, Kamphuis et al. discloses antenna disconnection detector circuit, e.g. for portable transceiver, has tuned circuit and detection circuit to sense abnormal voltage level indicative of absence of antenna. Kamphuis et al. further discloses the antenna detector measures a standing wave ratio (SWR) for use in a determination of whether or not an auxiliary antenna is or is not coupled to the auxiliary antenna port (see figures 3a and 3b, page 6 line 6- page 7 line 10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the wireless network node of Pennock et al. with the teachings of Kamphuis et al. for the purpose of sensing electromagnetic field signal in the presence or absence of an antenna.

Regarding claim 15, Pennock et al. discloses the wireless network node of claim 11, and an interface circuit (i.e. first and second diode) (see figures 3 and 4, page 7 lines 3-17).

However, Pennock et al. fails to disclose wherein the antenna detector comprises a coupler connected in series with the auxiliary antenna port, forward and reverse power detectors connected to the coupler, and a Standing Wave Ratio (SWR) detector and interface circuit connected to the forward and reverse power detectors, wherein in operation power from the auxiliary antenna port is coupled through the coupler and measured by both the forward and reverse power detectors, and the SWR detector and interface circuit compare outputs of the forward and reverse power detectors in order to determine whether or not an auxiliary antenna is coupled to the auxiliary antenna port.

Kamphuis et al. discloses wherein the antenna detector comprises a coupler connected in series with the auxiliary antenna port, forward and reverse power detectors connected to the coupler, and a Standing Wave Ratio (SWR) detector and interface circuit connected to the forward and reverse power detectors,

wherein in operation power from the auxiliary antenna port is coupled through the coupler and measured by both the forward and reverse power detectors, and the SWR detector and interface circuit compare outputs of the forward and reverse power detectors in order to determine whether or not an auxiliary antenna is coupled to the auxiliary antenna port (page 6 line 4-page 7 line 10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the wireless network node of Pennock et al. with the teachings of Kamphuis et al. for the purpose of detecting antenna presence.

12. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pennock et al.

Pennock et al. discloses the wireless network node of claim 11, wherein the antenna detector further comprising an interface circuit, the interface circuit (i.e. first and second diode) outputting a signal that is indicative of the presence or absence of an auxiliary antenna in the auxiliary antenna port (see figures 3 and 4, page 7 lines 3-17).

However, Pennock et al. fails to disclose wherein when an auxiliary antenna is inserted into the auxiliary antenna port the metal contact is bridged to a ground contact of the auxiliary antenna port, the antenna detector coupled to an interface circuit, and the antenna detector comprising a metal contact that rests adjacent to the auxiliary antenna port when an auxiliary antenna is not inserted into the auxiliary antenna port.

At the time the invention was made, it would have been to a person of ordinary skill in the art to make the antenna detector to comprise a metal contact that rests adjacent to the auxiliary antenna port when an auxiliary antenna is not inserted into the auxiliary antenna port, and when an auxiliary antenna is inserted into the auxiliary antenna port the metal contact is bridged to a ground contact of the auxiliary antenna port. Applicant has not disclosed that the antenna detector comprising a metal contact provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the use of a bias circuit coupled to the second antenna's transmission line to provide bias for the diodes because upon insertion of the coil cord connector of the second antenna into the external antenna connector, the center conductor is coupled to the transmission line. The transmission line provides a DC path to ground for the antenna detector circuit. In response, the transistor in the antenna detector circuit generates a bias current for the diodes in the smart switch.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the wireless network node of Pennock et al. to obtain the invention as specified in claim.

13. Claims 17-25,27,28,30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pennock et al. in view of International Pub. No. WO 03/017591 A1 to DANIEL F DIFONZO (DIFONZO et al.).

Regarding claims 17, and 18, Pennock et al. discloses the wireless network node of claim 16.

However, Pennock et al. fails to specifically disclose further comprising at least one access antenna to permit data transmission both to and from wireless mobile terminals located proximate the wireless network node (claim 17),

further comprising: a transit link radio coupled to the at least one transit antenna and the auxiliary transit antenna for providing data communication between the wireless network node and other wireless network nodes; an access link radio coupled to the at least one access antenna for providing communication between the wireless network node and mobile devices proximate the wireless network node; and a controller unit coupled to both the transit link radio and the access link radio for coupling data transmissions from a mobile device proximate the wireless network node to other wireless network nodes (claim 18).

Difonzo et al. discloses the wireless network node comprising at least one access antenna to permit data transmission both to and from wireless mobile terminals located proximate the wireless network node (reads on claim 17) (see figures 1 and 2, abstract, page 5 lines 18-26),

further comprising: a transit link radio coupled to the at least one transit antenna and the auxiliary transit antenna for providing data communication between the wireless network node and other wireless network nodes; an access link radio coupled to the at least one access antenna for providing communication between the wireless network node and mobile devices proximate the wireless network node; and a controller unit coupled to both the transit link radio and the access link radio for coupling data transmissions from a mobile device proximate the wireless network node to other wireless network nodes (reads on claim 18) (page 4 lines 10-30, page 5 lines 18-28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the wireless network node of Pennock et al. with the teachings of Difonzo et al for the purpose of enhancing communication between nodes.

Regarding claim 19, Pennock et al. discloses the wireless network node of claim 16, however, fails to disclose wherein the auxiliary antenna is aimed so signals therefrom are transmitted to another specific wireless network node.

Difonzo et al. discloses wherein the auxiliary antenna is aimed so signals therefrom are transmitted to another specific wireless network node (page 6 line 3-26).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the wireless network node of Pennock et al. with Difonzo et al for the purpose of establishing communication link with a specific wireless node.

Regarding claim 20, the combination of Pennock et al. and Difonzo et al. discloses the wireless network node of claim 19, however, the combination fails to disclose wherein the another specific wireless network node is located at a distance from the wireless network node greater than a distance permitting reliable transmission of data using the at least one transit antenna,

Difonzo et al. discloses wherein the another specific wireless network node is located at a distance from the wireless network node greater than a distance permitting reliable transmission of data using the at least one transit antenna (see figure 3, page 6 lines 5-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combination of Pennock et al. and Difonzo with the further teachings of Difonzo et al for the purpose of enhancing communication with remote users.

Regarding claims 21, 24, and 25, Pennock et al. discloses the wireless network node of claim 16.

However, Pennock et al. fails to disclose wherein the auxiliary antenna has a gain greater than that of the at least one transit antenna (claim 21);

and the auxiliary antenna provides the use of a substantially higher data rate than that provided by the at least one transit antenna (claim 24);

the auxiliary antenna provides substantially better interference suppression than that provides by the at least one transit antenna (claim 25).

Difonzo et al. discloses wherein the auxiliary antenna has a gain greater than that of the at least one transit antenna(reads on claim 21) (page 6 line 3-5, page 8 lines 1-7);

and the auxiliary antenna provides the use of a substantially higher data rate than that provided by the at least one transit antenna (reads on claim 24) (page 6 lines 16-20);

the auxiliary antenna provides substantially better interference suppression than that provides by the at least one transit antenna (reads on claim 25) (page 6 lines 14-16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the wireless network node of Pennock et al. with the teachings of Difonzo et al. for the purpose of improving quality of radio link between users, and having a high throughput.

Regarding claims 22 and 23, Pennock et al. discloses the wireless network node of claim 16.

However, Pennock et al. fails to disclose the wireless network node further comprising a directional-mount connected between the auxiliary antenna and auxiliary antenna port of the wireless network node (claim 22);

the directional-mount is adjustable in order to permit an optimal alignment of the auxiliary antenna(claim 23).

Difonzo et al. discloses the wireless network node further comprising a directional-mount connected between the auxiliary antenna and auxiliary antenna port of the wireless network node (reads on claim 22) (page 6 lines 14-18);

the directional-mount is adjustable in order to permit an optimal alignment of the auxiliary antenna(reads on claim 23)(page 6 lines 24-26, and page 7 lines 10-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the wireless network node of Pennock et al. with the teachings of Difonzo et al. for the purpose of steering the antenna for communicating with other unit in order to maintain maximum signal strength, and enhance communication between wireless network nodes.

Regarding claims 27 and 28, Pennock et al. discloses the method according to claim 26, further comprising, upon determining that an auxiliary antenna is coupled to the auxiliary antenna port (page 3 lines 22-29).

However, Pennock et al. fails to disclose the method comprising upon determining that an auxiliary antenna is coupled to the auxiliary antenna port, automatically aligning a beam of the auxiliary antenna with another wireless network node(claim 27);

the beam of the auxiliary antenna is aligned such that at least one of a strongest possible signal level is received and a lowest packet error rate is achieved on a resulting link (claim 28).

Difonzo et al. discloses automatically aligning a beam of the auxiliary antenna with another wireless network node (reads on claim 27) (page 6 lines 3-20);

the beam of the auxiliary antenna is aligned such that at least one of a strongest possible signal level is received and a lowest packet error rate is achieved on a resulting link (reads on claim 28) (page 8 lines 1-7, and page 9 lines 18-22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Pennock et al. with the teachings of Difonzo et al. for the purpose of steering the antenna for communicating with other unit in order to maintain maximum signal strength and link quality.

Regarding claims 30 and 31, Pennock et al. discloses the controller (switch) of claim 29, further comprising a function of determining that an auxiliary antenna is coupled to the auxiliary antenna port (page 3 line 29-page 4 line 16).

However, Pennock et al. fails to disclose the controller upon determining that an auxiliary antenna is coupled to the auxiliary antenna port coordinating an automatic alignment of a beam of the auxiliary antenna with another wireless network node (claim 30);

and the beam of the auxiliary antenna is aligned such that at least one of a strongest possible signal level is received and a lowest packet error rate is achieved on a resulting link (claim 31).

Difonzo et al. discloses the controller upon determining that an auxiliary antenna is coupled to the auxiliary antenna port coordinating an automatic alignment of a beam of the auxiliary antenna with another wireless network node (reads on claim 30) (page 6 lines 14 -20);

and the beam of the auxiliary antenna is aligned such that at least one of a strongest possible signal level is received and a lowest packet error rate is achieved on a resulting link (reads on claim 31) (page 6 lines 14 –20, page 9 lines 18-22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the controller of Pennock et al. with the teachings of Difonzo et al. for the purpose of maximizing link quality.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to communication method:

U.S. Pub. No. 20040204105 A1 to Ying-Chang Liang (Liang et al.)
U.S. Pub. No. 20020181492 A1 to Hideo Kasami (Kasami et al.)
U.S. Pat. No. 5621786 to Larry G. Fischer (Fischer et al.)
U.S. Pub. No. 20020128007 A1 to Tetsuhiko Miyatani (Miyatani).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EMEM EKONG whose telephone number is 571 272 8129. The examiner can normally be reached on 8-5 Mon-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOSEPH FEILD can be reached on 571 272 4090. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EOE
08/10/2005

ERIKA A. GARY
PRIMARY EXAMINER